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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/712,949	11/13/2003	Gary P. Hagen	37,234-01	9542

7590 04/18/2007

BP America Inc.
Docket Clerk, BP Legal, M.C. 5East
4101 Winfield Road
Warrenville, IL 60555

EXAMINER	
NGUYEN, TAM M	
ART UNIT	PAPER NUMBER
1764	

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
3 MONTHS	04/18/2007	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

Office Action Summary	Application No.	Applicant(s)	
	10/712,949	HAGEN ET AL.	
	Examiner	Art Unit	
	Tam M. Nguyen	1764	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *02 February 2007*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *31-39* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *31-39* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Response to Amendment

The rejection of claims 21-28 under 35 USC § 112 is withdrawn by the examiner in view of the amendment filed on February 2, 2007.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

The factual inquiries set forth in *Graham* **v.** *John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Claims 31-39 are rejected under 35 U.S.C. 103(a) as being unpatentable over EP 0252606 in view of Schultz et al. (US 2,365,220) and Farkas et al. (US 2,472,152).

The EP reference discloses a process for the production of a fuel. The process comprises contacting a hydrocarbon fraction with oxygen in the presence of a heterogeneous catalyst system to produce an oxidized product with improved characteristics including improved cetane number. The hydrocarbon fractions may contain sulfur or nitrogen. The oxidation catalyst contains metals such as chromium and may be supported on a suitable support material. The oxidized product is treated by separating an aqueous portion from the organic portion. The hydrocarbon to be oxidized may be hydrotreated prior to oxidation by contacting the hydrocarbon with a supported Group VI and/or VIII metal catalyst at hydrotreating conditions. The oxidation process may treat the entire hydrocarbon stream or a fraction of it. The oxygenation of the hydrocarbon portion is more than 1 percent by weight. The oxidized fraction may be blended with another fraction having a poor cetane rating. See page 3, lines 1-35; page 4, lines 41-58; page 5, lines 1-32; page 20, lines 1-13; and the examples.

The EP reference does not disclose treating the oxidized product with a neutralizing agent, does not disclose recycling the catalyst as in claim 36, does not disclose the percent by weight of metal in the oxidation catalyst as in claim 37, does not disclose the partitioning of fractions to produce a fraction collected below a temperature in the range from 260° C to 300° C, does not disclose the catalysts of claims 37-39. The EP reference also does not disclose the blending of the claimed fractions as in claim 34, and does not disclose that the oxygenated product having a sulfur content of no more than 15 ppm.

The Schultz reference discloses the need for neutralizing acids in oxidized hydrocarbon streams. See page 6, right column, lines 23-54.

The Farkas reference discloses that oxidized hydrocarbon streams can be neutralized by contacting the streams with alkali metal carbonates, bicarbonates, and hydroxides. See column 9, line 30 through column 10, line 13.

It would have been obvious to one having ordinary skill in the art at the time the invention was made to have modified the EP process by neutralizing the oxidized product to the extent claimed with the neutralizing agents as suggested by Schultz and Farkas because a stable, non-acidic product will result and carbonates and bicarbonates are neutralize acids in hydrocarbons.

It also would have been obvious to one having ordinary skill in the art at the time the invention was made to have modified the process of the EP reference by recycling the catalyst because the economics of the process will be improved by reducing the amount of new catalyst to be added to the process.

It also would have been obvious to one having ordinary skill in the art at the time the invention was made to have modified the process of the EP reference by partitioning fractions as claimed because the reference discloses that only a fraction of the feed may be treated by oxidizing. Therefore, one of skill in the art would choose the fractions to be treated that would result in the desired product.

It also would have been obvious to one having ordinary skill in the art at the time the invention was made to have modified the process of the EP reference by utilizing the catalysts of claims 25-27 because the metals disclosed by the EP reference include those claimed. Therefore,

applicant. In re Linter, 458 F.2d 1013, 173 USPQ 560 (CCPA 1972); In re Dillon, 919 F.2d 688, 16 USPQ2d 1897 (Fed. Cir. 1990), cert. denied, 500 U.S. 904 (1991).

The argument that Farkas describes neutralized acids in hydrocarbon effluent from non-catalytic oxidation, but does not disclose or suggest a presence of any sulfur or nitrogen compounds is not persuasive. It is general knowledge that acids containing oxidized hydrocarbon fraction is needed to be neutralized. One of skill in the art would neutralize the acids containing oxidized hydrocarbon fraction whether or not the fraction comprises sulfur or nitrogen compounds.

Conclusion

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

the use of the claimed catalysts in the EP process would be expected to result in the effective conversion of the hydrocarbons. Concerning the amounts of metals, one would utilize any amount that provides the desired oxidation activity.

It also would have been obvious to one having ordinary skill in the art at the time the invention was made to have modified the process of the EP reference by blending fractions as claimed because the EP reference discloses that the treated fraction may be blended with a poor cetane rating fraction. Therefore, if one desires to improve the cetane rating of a non-oxidized fraction, one would blend the oxidized fraction with the non-oxidized fraction as suggested by the EP reference.

It would have been obvious to one having ordinary skill in the art at the time the invention was made to have modified the process of the EP reference by producing an oxygenated product containing no more than 15 ppm of sulfur because the EP reference teaches that a hydrotreating step can be employed to remove sulfur and nitrogen content of the fuel to meet required specification such as ASTM D 975. It is within the level of one of skill in the art to produce an oxygenated product having the claimed amount of sulfur to meet a specific requirement.

Response to Remarks

The argument that Bownawell (the EP reference) does not teach the use of a liquid reaction medium containing a particulate is not persuasive. The EP reference teaches that a reaction liquid medium comprises catalyst which may comprise a support. Therefore, the limitation "a liquid reaction medium containing a particulate" is encompassed by the reference.

The argument that the EP reference shows that sulfur content is decreased from 0.74 weight percent to 0.42 weight percent while the instant claims are directed to a product with a sulfur content of no more than 15 ppm is not persuasive. To emphasis the inventive oxidation step, all of the examples of the EP reference do not involve a hydrotreating step. The EP reference, however, teaches that a hydrotreating step can be employed to remove sulfur and nitrogen content of the fuel to meet required specification such as ASTM D 975. It is within the level of one of skill in the art to produce an oxygenated product having the claimed amount of sulfur to meet a specific requirement.

The argument that the EP reference does not teach collecting a fraction below a temperature in the range from 260° C to 300° C is not persuasive. The EP reference teaches that a fraction from the optional hydrotreating is oxidized in the oxidation zone. The EP reference also teaches that any middle distillate fraction boiling ranges from 300 to 840° F can be treated in the oxidation zone. One of skill in the art would used any distillate fraction including a distillate having claimed boiling ranges and it would be expected that a such fraction would be effectively treated in the process of the EP reference.

The argument that Schultz does not disclose or suggest how to avoid the big problem of emulsion formation in scrubbing with caustic soda solution and does not disclose use of bicarbonate is not persuasive. The examiner relied upon Schultz to teach that acids containing oxidized hydrocarbon fraction it is needed to be neutralized. The used of caustic soda is taught by Farkas. The reason or motivation to modify the reference may often suggest what the inventor has done, but for a different purpose or to solve a different problem. It is not necessary that the prior art suggest the combination to achieve the same advantage or result discovered by

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Tam M. Nguyen whose telephone number is (571) 272-1452. The examiner can normally be reached on Monday through Thursday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Glenn Caldarola can be reached on (571) 272-1444. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Tam M. Nguyen
Examiner
Art Unit 1764

TN